

REPORT: FE -15-97
RAILROAD: Long Island Railroad (LIRR)
LOCATION: Nassau, New York
DATE, TIME: June 5, 1997, 10:40 a.m., EST

PROBABLE CAUSE:

The High-Tension Lineman lost contact with the tower while ascending for reasons unknown and fell to the ground.

EMPLOYEE: **Craft:**..... **Maintenance of Way**

Activity..... Removal and installation of line boots (electrical connections) and hose to the Long Island signal lines.

Occupation..... High-Tension, Lineman-Apprentice

Age..... 28 years

Length of Service..... Two years

Last Safety Training..... Daily

Last Physical Exam..... July 25, 1996

Circumstances Prior to the Incident

On June 5, 1997, a High-Tension, Apprentice-Lineman reported for duty at 8:00 a.m. at his Floral Park headquarters. His headquarters were approximately 20 minutes from the Rockville Center. His Foreman noted nothing unusual about the Lineman. On the day of the accident, the Lineman was part of a 4-man Crew headquartered in Floral Park, and his assigned shift was 8:00 a.m. to 4:00 p.m. His Crew was involved with the removal and installation of line boots (electrical connections) and hose to the LIRR signal lines to facilitate the Long Island Lighting Company's (LILCO) work on their lines located above. Tower 12 was approximately 87 feet high and supported five cross arms. The lowest cross arm carried the LIRR's signal cables. This cross arm was 53 feet above the ground. There were four additional cross arms on the tower, which was owned and operated by LILCO. The tower was constructed of a steel box lattice system with four corners, whose width narrowed upward from the base. Four perpendicular supports held barbed wire around the tower on a horizontal plane, approximately 18 feet from the base. The tower had no climbing assists attached to it. The steel members were moderately

rusty, a preferred state for free climbing, as it enabled a better grip. The Lineman had climbed Tower 11 prior to his work on Tower 12.

The accident occurred in daylight with mostly clear skies and an estimated temperature of 55° F. The humidity was 74 percent with a dew point of 48° F. Winds were reported to be from the southwest with speeds of five mph or less.

The Accident

The Lineman and the Crew with whom he was working moved to Tower No. 12 and prepared to install the line hose and line hoods. The Lineman prepared himself and adjusted his belt and hand line with the help of a second Lineman. The second Lineman watched the Lineman ascend the tower. The Lineman was “free climbing” the tower. He was not secured to the tower and was carrying the hand line up with him, which was attached to his belt. The second Lineman observed the Lineman climbing the northwest corner, favoring the north side. This position would have the Lineman facing primarily south. The second Lineman observed the Lineman climb past the barbed wire, at which point he focused his attention on the hand line to ensure it was free of entanglements. The second Lineman then looked down to prepare the hand line to continue the job. Two other railroad employees, a third Lineman and the Gang Foreman, also observed the Lineman ascend past the barbed wire. Both the third Lineman’s and the Gang Foreman’s observations ended after the Lineman passed the barbed wire. They were then involved with the collection and assembly of the line hoses at the base of the tower. The second Lineman observed the Lineman ascend to a point eight to 10 feet from the cross arm, which placed him approximately 44 feet from the ground.

The LIRR employees recalled hearing the hand line fall to the ground, immediately followed by a thud. A LILCO worker also recalled hearing a thud and turning around to see the Lineman on the ground. None of the four witnesses recalled any previous sounds of distress from the Lineman. A witness in the parking lot south of the elevated track structure, however, claimed that he heard a yell. He had been walking to his office on the south side of the tracks at the time. Upon hearing the yell, he turned around to see “something” falling by one of the electrical towers.

The Lineman landed north of the tower base. Hearing the thud, the second Lineman turned and saw the Lineman’s body lying on the ground. He then checked the Lineman and discovered he was still breathing. He also checked for a pulse which he discovered, then lost. The witness in the parking lot came over and saw the Lineman bleeding heavily and returned to his office to summon help. He returned with a Company Medical Coordinator, who was also a Registered Nurse. The third Lineman, seeing people aiding the Lineman, moved the truck to allow the ambulance access. The Gang Foreman notified the Power Director by radio of the emergency. The LILCO Lineman also went to get help. After determining that the Lineman had lost his pulse, the second Lineman initiated life breaths while the nurse performed chest compressions. They performed CPR until the Medical Crew from the Rockville Center Fire Department arrived and took control of the situation. The Lineman was transported to the South Nassau Hospital via

ambulance, where he was pronounced dead.

Post-Incident Investigation

No eyewitnesses saw the Lineman lose contact with the tower. Several witnesses observed the Lineman after he lost contact or landed on the ground.

FRA has no regulations covering the Lineman's duties. However, there are Federal regulations governing electric power generation, transmission, and distribution. These are located in Title 29 CFR 1910.269. Because the LIRR is a public entity, these Federal regulations are enforced by the New York State Department of Labor, instead of OSHA.

The LIRR had a 3-year apprenticeship program for Linemen that included a formalized training program. Topics covered by this program included Basic Electricity and Electronics, Electrical Fundamentals, and Electrical Maintenance Work. Pole climbing training was provided by an outside firm. Con Edison was said to have presented a course. Typically, the climbing of steel towers and poles was learned on the job. During their first six months, Trainees did not climb.

LIRR did not assure that employees received training to properly utilize fall protection equipment (e.g. safety belt and harness; and rope and pulley) while climbing. Therefore, a variety of methods were commonly used, some of them very unsafe. Most employees tied off with a safety belt before performing their work, and wore personal protective gear, such as Lineman boots, safety belt and harness, and a pair of electrician gloves. The High-Tension Linemen also carried a small pulley and a half-inch rope, approximately 125 to 140 feet, which was used to raise work materials. The rope usually was attached to the pulley, which had a metal hook which hooked through a loop on the Lineman's belt. Normal practice was to either carry the rope coiled or to let it play out. In the case of playing out the line, a Groundsman had responsibility for keeping the line free of entanglements. Once in position, the pulley was secured to the tower to raise the materials.

On June 5, the Lineman was insulating the LIRR power lines in a job called "rubbering up." This means covering the LIRR lines with insulating material to allow the LILCO employees to work on their lines above. Earlier, the Lineman had climbed Tower 11 to remove this insulation.

An autopsy and toxicological tests were performed. The autopsy was performed by the Nassau County Medical Examiner's Office. In the opinion of the Medical Examiner, the Lineman died as a result of Multiple Blunt Injury Trauma. The manner of death was listed as Accidental on the Medical Examiners' report. Toxicological tests were negative for the presence of alcohol and drugs.

REPORT: FE-16-97
RAILROAD: Central Michigan Railway Company (CMGN)
LOCATION: Bay City, Michigan
DATE, TIME: June 6, 1997, 9:35 p.m., EST

PROBABLE CAUSE:

Failure of Engineer to stop movement of train when communication was lost.

POSSIBLE CONTRIBUTING FACTOR:

Failure of the Conductor's radio due to low battery voltage.

EMPLOYEE:	Craft.....	Transportation
	Activity.....	Switching
	Occupation.....	Conductor
	Age.....	50 years
	Length of Service.....	Seven years
	Last Rules Training.....	Dec. 18, 1996
	Last Safety Training.....	Dec. 18, 1996
	Last Physical Exam.....	Oct. 5, 1993

Circumstances Prior to the Accident

On June 6, 1997 at 9 p.m., an Engineer and Conductor reported for duty for Yard Job 703 at Winona Yard, Bay City, Michigan, after receiving the statutory off-duty period. Locomotive 8802 was assigned to Yard Job 703 that day. After the Engineer had completed the locomotive inspection, the Crew moved the locomotive off of the engine dock track and proceeded to Track No. 3 to pick up a cut of cars. The Crew then shoved and released (kicked) an unknown number of cars to Track No. 2 East. The Crew then pulled the remaining 14 cars (12-2) southward to clear traffic on the Euclid Avenue Grade Crossing. After traffic had cleared the crossing, the Conductor advised the Engineer by radio that traffic was clear and instructed him to shove ahead (north) 20 to 25 car lengths to make a coupling on Track No. 1.

The Engineer was seated at the locomotive controls on the east side of the locomotive cab facing

north. The Conductor was positioned on the west side of the 14th car (to become the lead car during the shoving move).

The Conductor told the Engineer by radio that the crossing gate was down and traffic was clear. As the locomotive was nearing the Euclid Avenue Grade Crossing, the Engineer stated he was slowing down because he had no other instructions from the Conductor by radio. As the locomotives cleared the crossing, the Engineer applied the independent brake, and the train went into emergency.

The weather was clear, and the temperature was 76° F.

The Accident

After the emergency brake application occurred, the Engineer attempted to contact the Conductor on the radio several times, with no response. He then called the Dispatcher for a radio check. The Dispatcher stated the radio was working properly. The Engineer dismounted the locomotive and found the Conductor lying on the ground between Track No. 1 and the main track where the impact had occurred. He removed the Conductor's radio from the radio case and called the Dispatcher, who did not respond. He then went to the office and called the Dispatcher by telephone to request emergency assistance.

The Michigan State Police arrived at the scene at 9:45 p.m., a Bay Health Ambulance arrived at 9:55 p.m., and the Bangor Township Fire Department arrived at 9:55 p.m.

Please see the attached diagram of Winona Yard and the Euclid Avenue Grade Crossing to better visualize the accident scene and chain of events that led up to the fatality.

Post-Accident Investigation

The investigation revealed a severe impact between AEX 112201 (covered hopper), the southernmost car of 15 standing cars, and UP 273042 (bulk head flatcar), the northernmost car of the 14 cars being shoved onto Track No. 1. Evidence indicates the Conductor was riding on the west side of the bulk head flatcar in a position to be crushed by the resulting impact. The force of the collision caused considerable damage to both cars. It was also noted that the angle cock on the bulk head flatcar was open after the accident, suggesting an explanation for the emergency brake application. Measurements taken at the scene revealed the impact had occurred approximately 16 car lengths from the point where the northbound movement had begun.

The Engineer stated that the speed just prior to the accident was estimated at 6 to 8 mph. The event recorder removed from the locomotive was found to be inoperable and contained no data to substantiate the Engineer's statement. The maximum authorized speed at the location of the fatality was 10 mph.

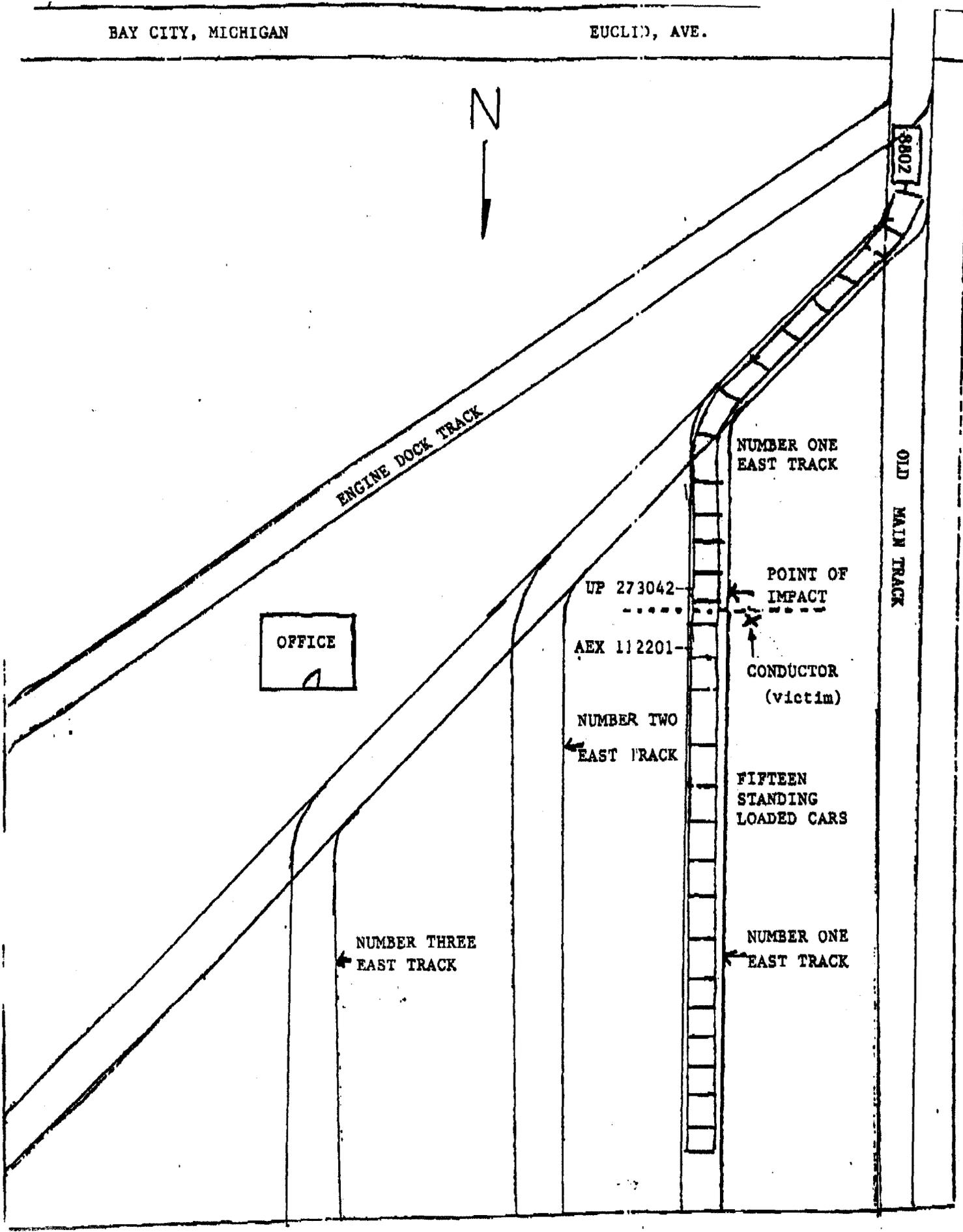
Tests were performed on the Conductor's battery charger and radio by an independent Motorola dealer. The tests revealed that the charging current measured 41 milliampere (MA). The manufacturer's specification for charging was 45 MA plus or minus 10 MA. Therefore, the charger was operating properly.

The radio was tested on June 9 and 10, 1997. The radio had been turned off, but had not been charged since the day of the accident. The radio was operated in standby mode 15 minutes prior to testing. The test revealed that the radio battery did not have sufficient voltage to operate in the transmit mode. Transmit power started at two watts and dropped to zero after 15 seconds of transmit time. A second test was performed after allowing the battery to recover. This time, transmit power measured seven tenths of a watt, and dropped to zero after two seconds. Transmitter modulation and frequency stability were present even at a low transmit power level. The receiving power was found to be sufficient. A broken antenna center pin was also discovered, but was not believed to be a factor.

A test of the battery charging capacity performed on June 10 revealed that the radio rated at 100 percent power after 14 hours of charging. The radio was then disassembled to check for intermittent operational problems in both the transmit and receive modes. No intermittent problems were discovered.

Based on the results of the radio tests, the investigators concluded that the Conductor's radio battery was not fully charged prior to being used on the day of the accident. The Conductor was allowed to keep the charger at his residence and was responsible for charging the unit before use each day. They could not determine why the battery had not been charged as required.

Toxicological tests were performed on the Engineer and the deceased Conductor, under FRA authority. Test results were negative.



ENGINE DOCK TRACK

NUMBER ONE EAST TRACK

OLD MAIN TRACK

OFFICE

UP 273042

POINT OF IMPACT

AEX 112201

CONDUCTOR (victim)

NUMBER TWO EAST TRACK

FIFTEEN STANDING LOADED CARS

NUMBER THREE EAST TRACK

NUMBER ONE EAST TRACK

8802